CLAIMS

1. A circuit board comprising an insulating ceramic substrate and conductive layers bonded to both surfaces of the insulating ceramic substrate, wherein the conductive layers comprise at least 99.98% by mass of aluminum, and display an average crystal grain diameter within a range from 0.5 mm to 5 mm and a standard deviation σ of the crystal grain diameter of no more than 2 mm.

2. A circuit board according to claim 1, wherein the conductive layers comprise rolled materials comprising 20 ppm or more of each of Cu, Fe and Si.

3. A circuit board according to claim 2, wherein the conductive layers are rolled with a draft of at least 15%.

4. A circuit board according to claim 1, wherein a surface area of a crystal with maximum crystal grain diameter within the conductive layers accounts for no more than 15% of a surface area of the insulating ceramic substrate.

5. A circuit board according to claim 1, wherein the insulating ceramic substrate is formed from at least one of Al_2O_3, AlN and Si_3N_4.

6. A circuit board according to claim 1, wherein the conductive layers are bonded to a surface of the insulating ceramic substrate using a brazing material, and the brazing material is one or more materials selected from a group consisting of Al-Si based materials, Al-Ge based materials, Al-Mn based materials, Al-Cu based materials, Al-Mg

based materials, Al-Si-Mg based materials, Al-Cu-Mn based materials, and Al-Cu-Mg-Mn based materials.

7. A circuit board according to claim 2, wherein a surface area of a crystal with maximum crystal grain diameter within the conductive layers accounts for no more than 15% of a surface area of the insulating ceramic substrate, the insulating ceramic substrate is formed from at least one of Al_2O_3, AlN and Si_3N_4, the conductive layers are bonded to a surface of the insulating ceramic substrate using a brazing material, and the brazing material is one or more materials selected from a group consisting of Al-Si based materials, Al-Ge based materials, Al-Mn based materials, Al-Cu based materials, Al-Mg based materials, Al-Si-Mg based materials, Al-Cu-Mn based materials, and Al-Cu-Mg-Mn based materials.

8. A method of producing a circuit board, comprising the steps of:

positioning a conductive layer comprising at least 99.98% by mass of aluminum on top of an insulating ceramic substrate with a brazing material disposed therebetween,

bonding the conductive layer and the insulating ceramic substrate together via the brazing material by compressing the conductive layer and the insulating ceramic substrate at a pressure within a range from 50 kPa to 300 kPa while heating to a temperature of at least 600°C in either a vacuum or an inert gas atmosphere, and

making an average crystal grain diameter of the conductive layer within a range from 0.5 mm to 5 mm, and making a standard deviation σ of the crystal grain diameter no more than 2 mm.

9. A method of producing a circuit board according to claim 8, further comprising a step for producing the conductive layer by heat treating a plate material comprising at least 99.98% by mass of aluminum and at least 20 ppm of each of Cu, Fe and Si, and then conducting rolling with a draft of at least 15%.

10. A power module comprising a circuit board according to claim 1, and a heat radiating plate for supporting the circuit board.

11. A power module according to claim 10, wherein at least a portion of the conductive layer of the circuit board is bonded to the heat radiating plate using a brazing material with a lower melting point than the brazing material.